The Crowd as an Innovation Partner

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Chronometer Wins
John Harrison
Unknown
Cabinet Maker

The Longitude Prize
1714 - Up to £20,000
Anyone can enter
Need a working solution

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Sir Isaac Newton – Principia and to the Longitude Committee:
"And I have told you oftener then once that it [the longitude] is not be found by Clock-work alone ….Nothing but Astronomy is sufficient for this purpose. But those methods are hitherto only two: one by the motion of the Moon, the other by that of the innermost Satellite of Jupiter"
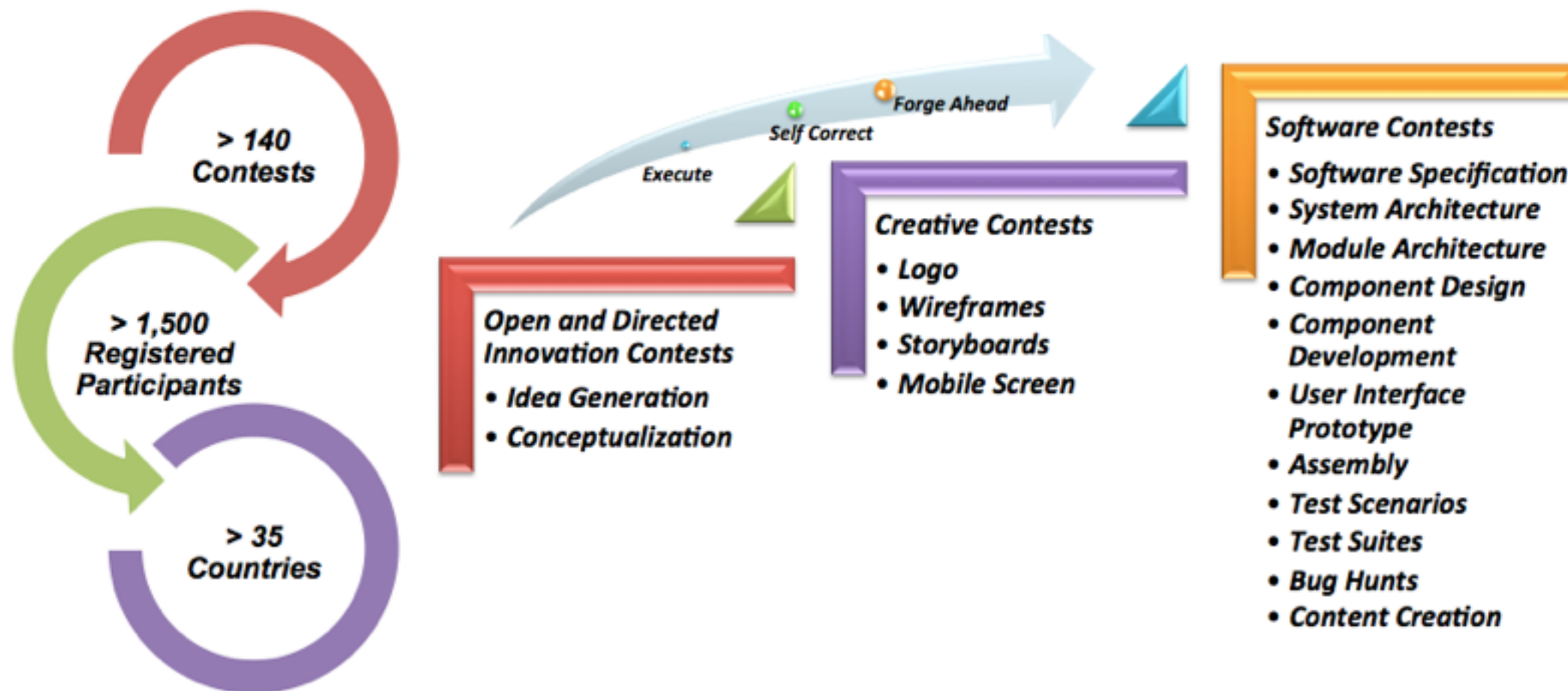
British Fleet Sinks in 1707
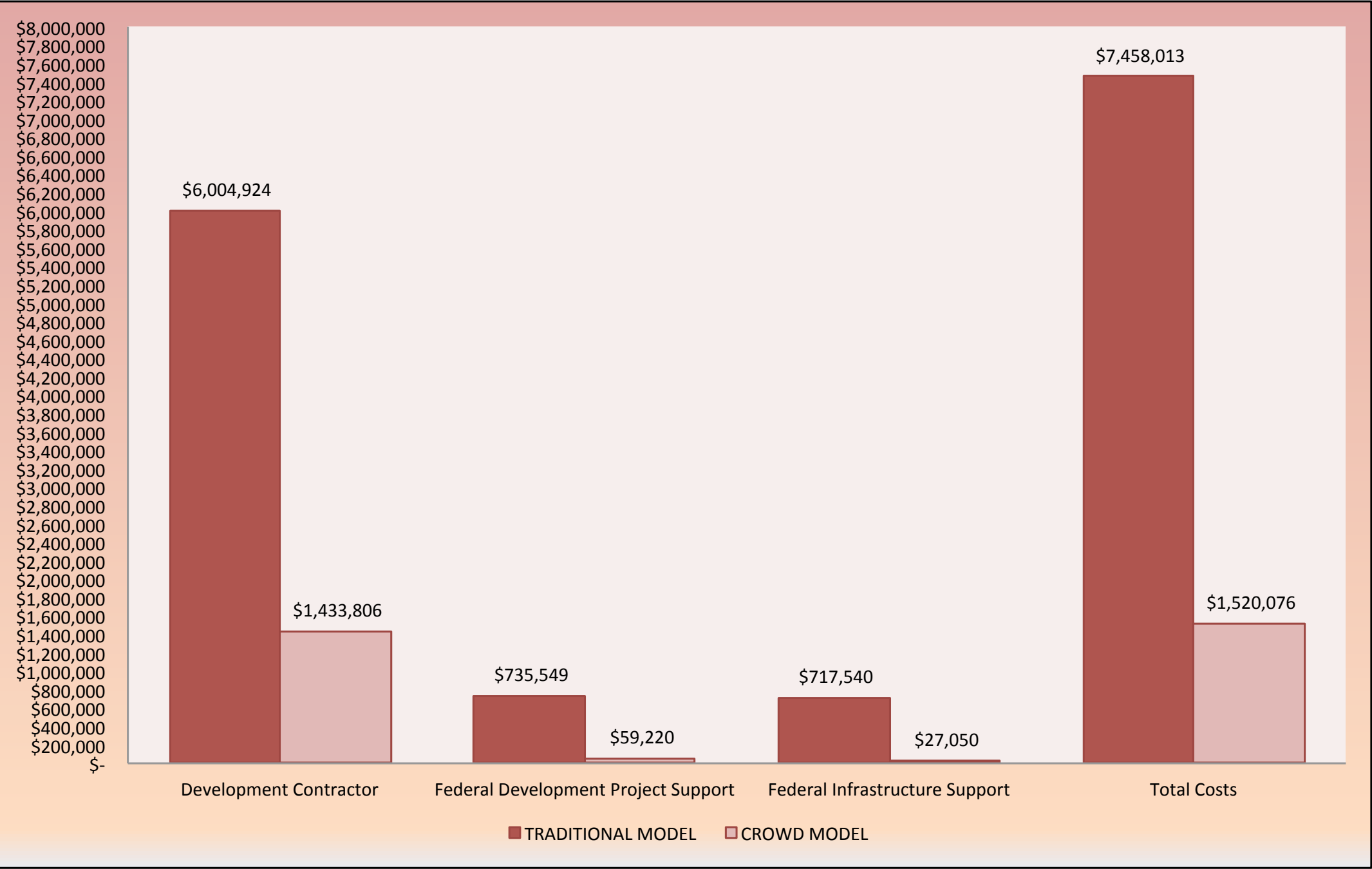Due to Bad Navigation

Over 100
Solutions Proposed

Contests and Communities in the Social Media Era

Provider Screening System for Medicaid Management Information System

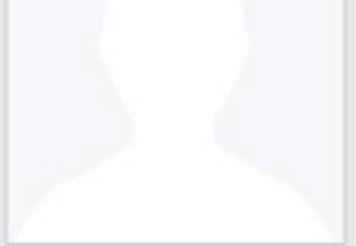# Provider Screening System for Medicaid Management Information System
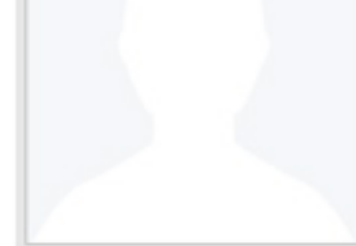
Contest to Solve Highly Complex Science and Engineering Problem

Broad Engagement
(459 Competitors & 2000 Code Submissions)

Broad Engagement (459 Competitors & 2000 Code Submissions) & High Performance

Solar Power Output W/h

Internal NASA Solution

120000

90000

60000

30000

0
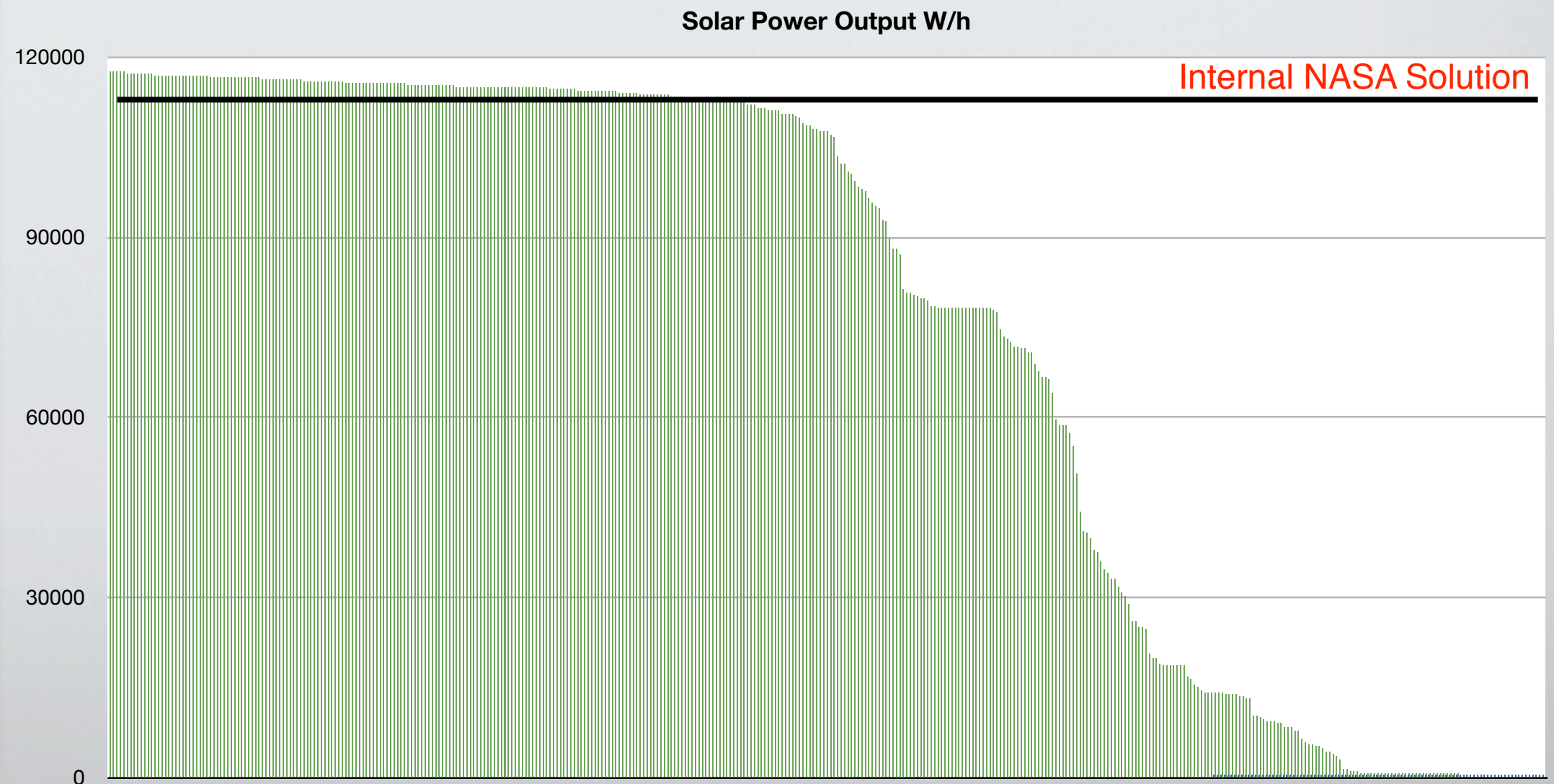
Uncertainty Haunts Most Research and Innovation Efforts....
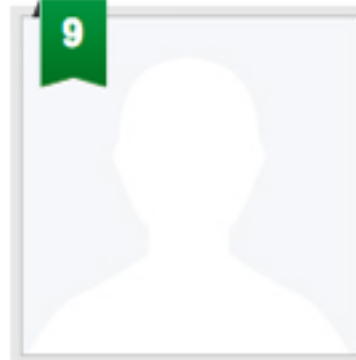
"When you come to research and development you can't answer any of the questions.. […].. You don't know when you are going to get the thing, whether it's going to work or not and whether it's going to have any value whatsoever"

Charles Kettering
(VP, General Motors
Inventor: Electrical Starting Motor, Ethyl Gasoline, Freon, 186 Patents)

.....Finding the Right People is also a Major Challenge

"No Matter Who You Are Most of the Smartest People Work for Someone Else"

Bill Joy
(Sun Microsystems, BSD Unix, Java)

Models for Organizing Creative Effort are also Changing

"Crowds" Can Be Organized as Contests or Communities
(Boudreau & Lakhani 2013; King and Lakhani 2013)

Contests/Competition

- Innovation problem requires diversity of approaches and broad experimentation

- Sponsor not sure what combination of skills and approaches might be useful in solution generation

- Clear rules for participation and winning

Communities/Collaboration

- Innovation problem requires cumulative knowledge building and aggregation of diverse inputs

- Contributions range from mix & match to co-production with modular tasks and functions

- Informal, norms-based governance

Contests and Communities Enable Discovery of "Extreme Value" Outcomes Through Lots of Entry

Probability Density vs. "Value" of Innovation Outcomes
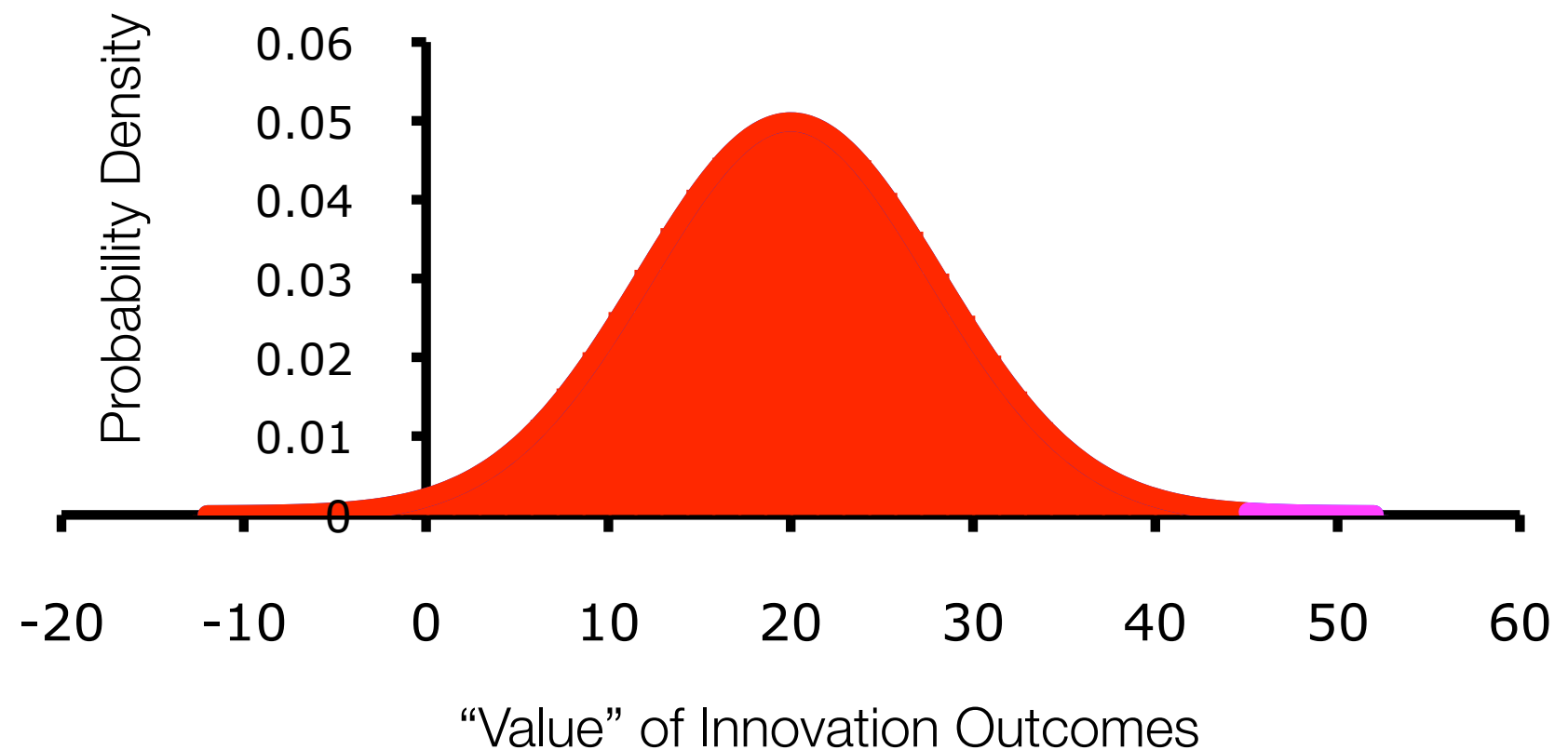
Harvard Medical School Contest for "Big Data Analytics" Problem in Genomics

- Objective: Improve on NIH MegaBlast algorithm for nucleotide sequence alignment for immunogenomics

- Generate and evaluate external solver participation in development of gene-sequencing tools applied to immunoglobulin and antibody genomics

- Two week contest - $6000 prize pool on TopCoder.com

Contest Yields Extreme Value Outcomes Relatively Quickly (Lakhani et al. 2013)

- 733 signups - 122 coders submitted 654 submissions

- 89 different approaches to solve problem identified

- Winners from Russia, France, Egypt, Belgium & US

- Annotate 10 million sequences in < 3 mins; Quarter billion sequences in ~ 1 hour on laptop

Score vs. speed 1e5 sequences
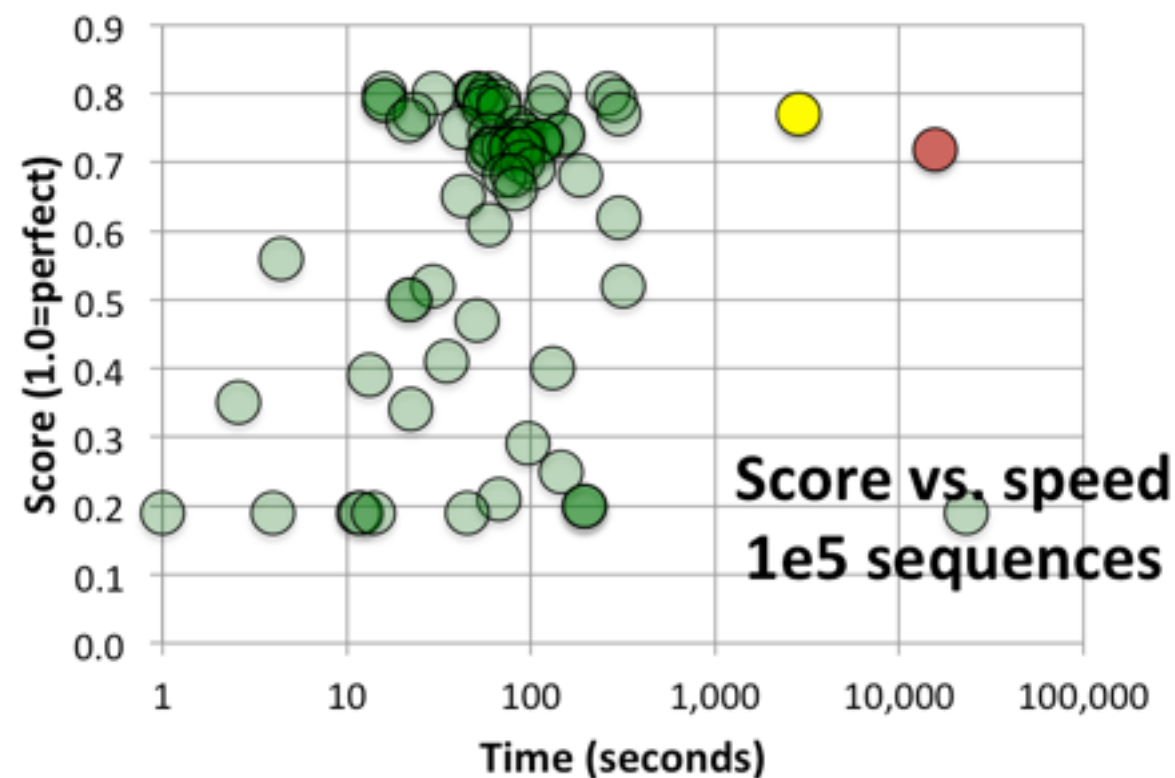
What Motivates People to Participate in Contests?

Recall: Most People Lose in Contests

When Do Crowds Don't Work?

Crowdsourcing or witch hunt? Reddit and 4chan users attempt to solve Boston bombing case

17 Comments / f Shares / 85 Tweets / Stumble / @ Email / More +

Competing Logics for Organizing Innovation

Internal Development

Define the Problem
Find the "Right" Workers
Incentivize Effort
Monitor Effort
Motivate and Energize Workers
Redefine the Problem
Develop Criteria for Evaluation
Pray for Performance

Contest

Define the Problem
Develop Criteria for Evaluation
Set Prize
Attract Solvers
Test Solutions
Pay for Performance

"The Future is Already Here, Its Just Not Very Evenly Distributed" - William Gibson

What Have We Learned?

Thanks!

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